

CURRICULUM VITAE

**IAIN M. COCKBURN**

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I. EDUCATION

Undergraduate

Queen Mary College, University of London, B.Sc.(Econ) Hons 1st Class, 1984.

Graduate

Harvard University, A.M. Economics, 1987

Harvard University, Ph.D. Economics, 1990

Doctoral Thesis

*Essays on the Analysis of Technical Change*. Supervisor: Zvi Griliches, Paul M. Warburg Professor of Economics, Harvard University.

Academic Awards Prior to Final Degree

Kennedy Scholar, 1984

Alfred P. Sloan Doctoral Dissertation Fellowship, 1988

## II. PROFESSIONAL EMPLOYMENT

September 2013 – June 2014	<i>Visiting Scholar, Technology, Innovation, and Entrepreneurship Department, MIT Sloan School of Management.</i>
July 2011 –	<i>Richard C. Shipley Professor in Management, Questrom School of Business, Boston University</i>
July 2010 – July 2011	<i>Professor of Strategy and Innovation, School of Management, Boston University</i>
September 1999 – July 2010	<i>Professor of Finance and Economics, School of Management, Boston University</i>
July 1998 – July 2000	<i>VanDusen Professorship in Business Administration, Faculty of Commerce, University of British Columbia</i>
July 1997 – July 1998	<i>Associate Professor with Tenure, Faculty of Commerce, University of British Columbia.</i>
July 1996 – June 1997	<i>Visiting Scholar, Department of Economics, Harvard University.</i>
July 1993 – December 1993	<i>Visiting Scholar, Economics, Finance, and Accounting Department, MIT Sloan School of Management.</i>
July 1989 – June 1997	<i>Assistant Professor, Faculty of Commerce, University of British Columbia.</i>

## III. PROFESSIONALLY RELATED ACTIVITIES

### Awards

UBC Faculty of Commerce Research Excellence Award, 1997

UBC Commerce Graduate Society Teaching Award, 1997

BU School of Management, 2<sup>nd</sup> Year MBA Teacher of the Year, 2004-5

Everett W. Lord Distinguished Faculty Scholar, BU School of Management 2004 - 2011

### Research Interests

Economics of Technical Change, Intellectual Property, Competitive Strategy, Industrial Organization, Information Technology, Pharmaceutical and Health Economics, Applied Econometrics

## Teaching

UBC Undergraduate classes: Corporate and Industry Analysis; Government and Business

UBC MBA classes: Technology Strategy and Policy; Business Policy; Competition in High Technology Industries; Intellectual Property and Business Strategy; Strategic Partnering

BU MBA/EMBA classes: Competition in High Technology Industries; Intellectual Property and Business Strategy, Managing Global Customers, Competencies and Capabilities; Competition, Innovation, and Strategy, Licensing and Partnering; IP Strategies for Life Sciences and Technology

BU PhD classes: Seminar in Strategy and Innovation

Executive Education seminars: Hanjung Programme (UBC); Posco Programme (UBC); Strategic Planning in High Tech Environments (UBC); IBM Advanced Program for Client Executives (BU)

## Committees

Steering Committee, Government Industry Partnerships for the Development of New Technologies, National Research Council, Washington DC, 1998 -

Scientific Committee, European Union INNOVPROD Research Network 1996 - 1999

## Refereeing

Journal of Health Economics, Journal of Political Economy, American Economic Review, RAND Journal of Economics, Journal of the American Statistical Association, Journal of Economics and Management Strategy, Review of Economics and Statistics, Journal of Industrial Economics, Quarterly Journal of Economics, Journal of International Economics, Management Science, Managerial and Decision Economics, Journal of Economic Behavior and Organization, Economic Inquiry, Administrative Science Quarterly, others.

## Editorships

Associate Editor, Strategy Department, Management Science, 1997-2000

Coeditor, Journal of Economics and Management Strategy, 1998 – 2005

Editorial Board, Strategy and Organization, 2001 – 2004

## Professional Affiliations

Research Associate, National Bureau of Economic Research, Cambridge MA

Member, Conference on Research in Income and Wealth, 2011 -

Associate Member, Faculty of Pharmaceutical Sciences, UBC 1992-1998

Research Director, BU Institute for Technology, Entrepreneurship and Commercialization, 2008 - 2010

## Major Research Funding

August 1991	<i>Determinants of Research Productivity in the Pharmaceutical Industry</i> (with Rebecca Henderson, MIT) Alfred P. Sloan Foundation, Hoffman-La Roche Ltd., Bristol Myers Squibb Inc, Pharmaceutical Manufacturers Association, \$170,000
July 1994	<i>Pharmaceutical Pricing</i> , MIT Program on the Pharmaceutical Industry, \$40,000
April 1994	<i>Innovation and Entrepreneurship</i> - UBC-SSHRC Entrepreneurship Research Alliance, \$130,000
April 1995	<i>Public-Private Interaction in Pharmaceutical Research</i> (with Rebecca Henderson, MIT) Sloan Foundation and MIT Program on the Pharmaceutical Industry, \$120,000
January 1996	<i>Hedonic Price Analysis of Drug Therapies for Rheumatoid Arthritis</i> (with Aslam Anis, UBC) NBER and Bureau of Economic Analysis (US Department of Commerce), \$35,000
April 1997	<i>Pharmaceutical Research in the New Environment</i> (with Rebecca Henderson, MIT) Alfred P. Sloan Foundation and MIT Program on the Pharmaceutical Industry, \$120,000.
July 1998	<i>Intellectual Property Rights in the Knowledge-Based Economy</i> , Industry Canada, \$25,000
October 1998	<i>Canadian Arthritis Network</i> (Co-investigator; Tony Cruz, University of Toronto, PI) SSHRC/NSERC National Centers of Excellence Award, \$14.5million
August 2000	<i>Patent Examiner Productivity and Quality</i> (with Samuel Kortum, BU, and Scott Stern MIT). National Academy of Sciences/NRC, \$20,000
April 2002	<i>Time Series Modeling of Trends in Medication Prescribing</i> (Co-investigator; Randall Stafford, Stanford University, PI). Agency for Healthcare Research and Quality, HS013405, \$992,000
October 2002	<i>Valuing Mobile Computing</i> (Principal Investigator; Ernst Berndt, MIT, Co-Investigator). National Science Foundation, SES-0219235, \$145,000
October 2005	<i>Harnessing Patent Data for Social Science Research</i> (Principal Investigator; Bronwyn Hall, Walter Powell, Manuel Trajtenberg, Co-PIs). National Science Foundation, SES-0527657, \$599,000
October 2008	<i>Strategic, Economic and Epidemiological Factors Affecting the Changing Allocation of Global Clinical Trials</i> (Co-PI; Ernst Berndt, Principal Investigator, Howard Golub, Co-PI). Alfred P. Sloan Foundation, \$302,000
October 2009	<i>An Experimental Producer Price Index for Clinical Trials</i> (Principal Investigator; Ernst Berndt, Co-PI). National Science Foundation, SES-0915677, \$120,000
June 2012	<i>Global Diffusion of New Drugs: Patent Policy, Price Regulation and Health Institutions</i> (Principal Investigator, Mark Schankerman Co-PI.) National Foreign Trade Council Foundation, \$508,799
December 2012	<i>Evaluating Changes in Pharmaceutical Therapies for Medicare and Other Payers</i> (Co-PI, Ernst Berndt, Principle Investigator.) National Institute on Aging, R01AG043560, \$932,000.

## PUBLICATION RECORD

Iain M. Cockburn

### A. PUBLICATIONS

#### Refereed Articles

1. Cockburn, I. and Z. Griliches "Industry Effects and Appropriability Measures in the Stock Market's Valuation of R&D and Patents." *American Economic Review, Papers and Proceedings*, 1988, 78(2), pp. 419-423.
2. Cockburn, I. and R. Henderson "Racing to Invest? The Dynamics of Competition in Ethical Drug Discovery." *Journal of Economics and Management Strategy*, 1994, 3(3), pp. 481-519.
3. Henderson, R. and I. Cockburn "Measuring Competence: Exploring Firm Effects in Pharmaceutical Research." *Strategic Management Journal*, 1994, 15, pp. 63-84.
4. Griliches, Z. and I. Cockburn "Generics and New Goods in Pharmaceutical Price Indexes." *American Economic Review*, 1994, 84(5), pp. 1213-1232.
5. Amit, R., E. Muller, and I. Cockburn "Opportunity Costs and Entrepreneurial Activity." *Journal of Business Venturing*, 1995, 10(2), pp. 95-106. Reprinted in *Foundations of Entrepreneurship*, edited by S. Shane, Edward Elgar, 2000.
6. Wang, P., M. Puterman, N. Le, and I. Cockburn "Mixed Poisson Models with Covariate-Dependent Rates." *Biometrics*, 1996, 52, pp. 381-400.
7. Henderson, R. and I. Cockburn "Scale, Scope, and Spillovers: Determinants of Research Productivity in the Pharmaceutical Industry." *RAND Journal of Economics*, 1996, 27(1), pp. 32-59.
8. Berndt, E., I. Cockburn, and Z. Griliches "Pharmaceutical Innovations and Market Dynamics: Tracking Effects on Price Indexes for Anti-Depressant Drugs." *Brookings Papers on Economic Activity: Microeconomics*, 1996, 1, pp. 133-188.
9. Ellison, S., I. Cockburn, Z. Griliches, and J. Hausman "Characteristics of Demand for Pharmaceutical Products: An Examination of Four Cephalosporins." *RAND Journal of Economics*, 1997, 28(3), pp. 426-446.
10. Wang, P., I. Cockburn, and M. Puterman "Analysis of Patent Data - A Mixed Poisson Regression Approach." *Journal of Business and Economic Statistics*, 1998, 16(1), pp. 27-41.
11. Cockburn, I. and R. Henderson "Absorptive Capacity, Coauthoring Behavior, and the Organization of Research in Drug Discovery." *Journal of Industrial Economics*, 1998, 46(2), pp. 157-182.
12. Berndt, E., I. Cockburn, D. Cocks, A. Epstein, and Z. Griliches "Prescription Drug Prices for the Elderly." *Monthly Labor Review*, September 1998, 121(9), pp. 23-34.
13. Cockburn, I., H. Bailit, E. Berndt, and S. Finkelstein "When Antihistamines Go To Work." *Business and Health*, March 1999, 17(3), pp. 49-50

14. Cockburn, I., H. Bailit, E. Berndt, and S. Finkelstein "Loss of Work Productivity Due to Illness and Medical Treatment." *Journal of Occupational and Environmental Medicine*, November 1999: 41(11), pp. 1-6.
15. Cockburn, I., R. Henderson, and S. Stern, "Untangling the Origins of Competitive Advantage." *Strategic Management Journal*, December 2000, 21(10-11), pp. 1123-1145. Reprinted in *The SMS Blackwell Handbook of Organizational Capabilities: Emergence, Development, and Change*, edited by Constance Helfat, Strategic Management Society Book Series. Malden, MA, 2003.
16. Lanjouw, J. and I. Cockburn "New Pills For Poor People? Empirical Evidence After GATT." *World Development*, February 2001, 29(2), pp. 265-289.
17. Cockburn, I. and R. Henderson "Scale and Scope in Drug Development: Unpacking the Advantages of Size in Pharmaceutical Research." *Journal of Health Economics*, 2001, 20(6), pp.1033-1057.
18. Stafford, R., J. Ma, S. Finkelstein, K. Haver, and I. Cockburn "National Trends in Asthma Visits and Asthma Pharmacotherapy, 1978-2002." *Journal of Allergy and Clinical Immunology*, 2003, 111(4), pp.729-735.
19. Ma J., R. Stafford, I. Cockburn, and S. Finkelstein "A Statistical Analysis of the Magnitude and Composition of Drug Promotion in the U.S." *Clinical Therapeutics*, 2003; 25(5), pp.1503-1517.
20. Agrawal, A., and I. Cockburn "The Anchor Tenant Hypothesis: Exploring the Role of Large, Local, R&D-Intensive Firms in Regional Innovation Systems." *International Journal of Industrial Organization*, 2003, 21(9), pp. 1217-1433.
21. Stafford, R., C. Furberg, S. Finkelstein, I. Cockburn, T. Alehegn, and J. Ma "The Impact of Clinical Trial Results On National Trends in Alpha-Blocker Prescribing, 1996-2002." *Journal of the American Medical Association*, 2004, 291, pp.54-62.
22. Cockburn, I. "The Changing Structure of the Pharmaceutical Industry." *Health Affairs*, 2004, 23(1), pp.10-22.
23. Furman, J., M. Kyle, I. Cockburn, and R. Henderson "Public and Private Spillovers, Location and the Productivity of Pharmaceutical Research." *Annales d'Economie et de Statistique*, 2005, No. 79/80, pp. 167-190.
24. Grabowski, H., I. Cockburn, I., G. Long "The Market for Follow-on Biologics: How Will It Evolve?" *Health Affairs*, 2006, 25(5), pp.1291-1301.
25. Berndt, E., I. Cockburn, and K. Grépin "The Impact of Incremental Innovation in Biopharmaceuticals: Drug Utilization in Original and Supplemental Indications." *Pharmacoeconomics*, 2006, 24 Suppl. 2, pp. 69-83.
26. Agrawal, A., I. Cockburn, and J. McHale "Gone But Not Forgotten: Labor Flows, Knowledge Spillovers, and Enduring Social Capital." *Journal of Economic Geography*, 2006, 6(5), pp. 571-591.
27. Chwelos, P., E. Berndt, and I. Cockburn "Faster, Smaller, Cheaper: An Hedonic Price Analysis of PDAs." *Applied Economics*, 2008, 40(22):2839-56.
28. Cockburn, I., and M. MacGarvie "Patents, Thickets and the Financing of Early-Stage Firms: Evidence from the Software Industry." *Journal of Economics and Management Strategy*, 2009, 18(3):729-773.

29. Agrawal, A., Cockburn, I. and C. Rosell “Not Invented Here: Innovation in Company Towns.” *Journal of Urban Economics*, 2010, 67(1):78-89.
30. Cockburn, I., M. MacGarvie, and E. Müller “Patent Thickets, Licensing and Innovative Performance.” *Industrial and Corporate Change*, 2010, 19(3): 899-925.
31. Wagner, S. and I. Cockburn “Patents and the Survival of Internet-related IPOs.” *Research Policy*, 2010, 39(2):214-228.
32. Cockburn, I. and Stern, S. “Finding the Endless Frontier: Lessons from the Life Sciences Innovation System for Technology Policy.” *Capitalism and Society*, 2010, 5(1), article 1.
33. Cockburn, I., and MacGarvie, M. “Entry and Patenting in the Software Industry.” *Management Science*, 2011, 57(5):915-933.
34. Berndt, E., Blalock, N., and Cockburn, I. “Diffusion of New Drugs in the Post-TRIPs Era.” *International Journal of the Economics of Business*, 2011, 18(2):203-224.
35. Kleis, L., P. Chwelos, R. Ramirez and I. Cockburn “Information Technology and Intangible Output: The Impact of IT Investment on Innovation Productivity.” *Information Systems Research*, 2012, 23:42-59.
36. Müller, E., I. Cockburn, and M. MacGarvie, “Access to intellectual property for innovation: Evidence on problems and coping strategies from German firms.” *Research Policy*, 2013, 42(2):529-541.
37. Agrawal, A. Cockburn, I., Galasso, A. and A. Oettl “Why are some regions more innovative than others? The role of small firms in the presence of large labs.” *Journal of Urban Economics*, 2014, 81(1), 149–165.
38. Agrawal, A., I. Cockburn, L. Zhang “Deals Not Done: Sources of Failure in the Market for Ideas.” *Strategic Management Journal*, 2015, 26:976-986. (Published online April 2014.)
39. Berndt, E. and I. Cockburn “Price Indexes for Clinical Trial Research: A Feasibility Study.” *Monthly Labor Review*, June 2014.
40. Berndt, E. and I. Cockburn “The Hidden Cost of Low Prices: Access to New Drugs in India.” *Health Affairs*, 2014, 33(9):1567-1575.
41. Freedman, L. I. Cockburn, and T. Simcoe “The Economics of Reproducibility in Preclinical Research.” *PLOS Biology*, 13(6): e1002165.
42. Cockburn, I. and G. Long “The Importance of Patents to Innovation: Updated Cross-Industry Comparisons with Biopharmaceuticals.” *Expert Opinion on Therapeutic Patents*, 2015, 25(7):739-742.
43. Cockburn, I., J. Lanjouw, and M. Schankerman “Patents and the Global Diffusion of New Drugs.” *American Economic Review*, forthcoming.

### Contributions to Edited Volumes

1. Griliches, Z. and I. Cockburn “Generics and the Producer Price Index for Pharmaceuticals.” Chapter in R. Helms (ed.) *Competitive Strategies in the Pharmaceutical Industry*, American Enterprise Institute, Washington DC, 1996.
2. Henderson, R. and I. Cockburn “The Determinants of Research Productivity in Ethical Drug Discovery.” Chapter in R. Helms (ed.) *Competitive Strategies in the Pharmaceutical Industry*, American Enterprise Institute, Washington DC, 1996.
3. Henderson, R. and I. Cockburn “Taille de la Firme et Productivité de la Recherche.” Chapter in S. Jacobzone (ed.) *La santé: Trajectoires d’Avenir*, INSEE, Paris, 1997.
4. Berndt, E., I. Cockburn, D. Cocks, A. Epstein, and Z. Griliches “Is Price Inflation Different for the Elderly? An Empirical Analysis of Prescription Drugs.” Chapter in A. Garber (ed.) *Frontiers in Health Policy Research*, MIT Press, Cambridge MA, 1998.
5. Cockburn, I. and R. Henderson “The Economics of Drug Discovery.” Chapter in Ralph Landau, Basil Achilladelis and Alexander Scriabine (eds.) *Pharmaceutical Innovation*, Chemical Heritage Press, Philadelphia PA, 1999, pp. 308-331.
6. Cockburn, I., R. Henderson, L. Orsenigo, and G. Pisano “Pharmaceuticals and Biotechnology.” Chapter in D. Mowery (ed.) *U.S. Industry in 2000: Studies in Competitive Performance*, National Research Council, Washington DC, 1999, pp. 363-398
7. Cockburn, I. and P. Chwelos “Intellectual Property Rights and the Transition to the Knowledge-based Economy.” Chapter in L. Lefebvre, E. Lefebvre, and P. Mohnen (eds.) *Doing Business in the Knowledge-based Economy*, Kluwer Academic Publishers, Boston MA, 2001.
8. Henderson, R. and I. Cockburn “Measuring Competence? Exploring Firm Effects in Drug Discovery.” Chapter in G. Dosi, R. Nelson, and S. Winter (eds.) *The Nature and Dynamics of Organizational Capabilities*, Oxford University Press, Oxford, 2000, pp.155-182.
9. Cockburn, I. and A. Anis “Hedonic Analysis of Arthritis Drugs.” Chapter in E. Berndt and D. Cutler (eds.) *Medical Care Output and Productivity*, University of Chicago Press, Chicago IL, 2001.
10. Cockburn, I. and R. Henderson “Publicly Funded Science and the Productivity of the Pharmaceutical Industry.” Chapter in A. Jaffe, J. Lerner, and S. Stern (eds.) *Innovation Policy and the Economy*, Volume 1, pp 1-34. MIT Press for the National Bureau of Economic Research, Cambridge MA, 2001.
11. Cockburn, I., S. Kortum, and S. Stern “Are All Patent Examiners Equal? Examiners, Patent Characteristics and Litigation Outcomes.” Chapter in W. Cohen and S. Merrill (eds.) *Patents in the Knowledge-based Economy*, National Academies Press, Washington DC, 2003.
12. Cockburn, I. “O Brave New Industry That Has Such Patents In It! Reflections on the Economics of Genome Patents.” Chapter in F. S. Keiff (ed.) *Perspectives on Properties of the Human Genome Project*, Academic Press, Boston, 2004.
13. Lacetera, N., I. Cockburn, and R. Henderson “Do Firms Change Capabilities by Hiring New People? A study of the Adoption of Science-based Drug Discovery.” Chapter in J. Baum and A. McGahan (eds.) *Business*



*Strategy over the Industry Lifecycle: Advances in Strategic Management Volume 21*, pp 133-159, JAI-Elsevier Science, New York, 2004.

14. Cockburn, I. "State Street Meets the Human Genome Project: Intellectual Property and Bioinformatics." Chapter in R. Hahn (ed.) *Intellectual Property Rights in Frontier Industries: Biotechnology and Software*, AEI-Brookings Press, Washington DC, 2005.
15. Cockburn, I. "Blurred Boundaries: Tensions Between Open Scientific Resources and Commercial Exploitation of Knowledge in Biomedical Research." Chapter in D. Foray and B. Kahin (eds.) *Advancing Knowledge and the Knowledge Economy*. MIT Press, 2006.
16. Cockburn, I. "Is the Pharmaceutical Industry in a Productivity Crisis?" Chapter in A. Jaffe, J. Lerner, and S. Stern (eds.) *Innovation Policy and the Economy*, Volume 7. MIT Press for the National Bureau of Economic Research, Cambridge MA. 2007. pp.1-32.
17. Cockburn, I. "Pharmaceuticals." Chapter in D. Mowery, J. Macher and S. Merrill (eds.) *Globalization of Innovation: U.S. Firms Competing in a New World*. National Academies Press, Washington DC. 2008. pp.207-230.
18. Cockburn, I. "Intellectual Property Rights and Pharmaceuticals: Challenges and Opportunities for Economic Research." In *The Economics of Intellectual Property. Suggestions for Further Research in Developing Countries and Countries with Economies in Transition*. World Intellectual Property Organization, Geneva. 2009.
19. Cockburn, I. and M. Slaughter "The Global Location of Biopharmaceutical Knowledge Activity: New Findings, New Questions," Chapter in J. Lerner, and S. Stern (eds.) *Innovation Policy and the Economy*, Volume 10. University of Chicago Press for the National Bureau of Economic Research, Cambridge MA, 2010.
20. Cockburn, I. S. Stern, and J. Zausner "Finding the Endless Frontier: Lessons from the Life Sciences Innovation System for Energy R&D." Chapter in R. Henderson and R. Newell, eds. *Accelerating Energy Innovation: Lessons from Multiple Sectors*. University of Chicago Press for the National Bureau of Economic Research, Cambridge MA, 2011.

Working Papers, Manuscripts etc.

1. Cockburn, I. "The Demand for Water in Maricopa County." Salt River Project, Phoenix, Arizona, 1985.
2. Cockburn, I. and M. Frank "Market Conditions and the Retirement of Physical Capital: Evidence from Oil Tankers." NBER Working Paper No. 4194, October 1992.
3. Griliches, Z. and I. Cockburn "Generics and New Goods in Pharmaceutical Price Indexes." NBER Working Paper No. 4272, February 1993.
4. Henderson, R. and I. Cockburn "Racing or Spilling? The Determinants of Research Productivity in Ethical Drug Discovery." MIT Sloan School of Management Working Paper No. 3642-93, 1993.
5. Cockburn, I. and R. Henderson "Determinants of Research Productivity in the Pharmaceutical Industry." NYU Center for Japan-US Business and Economic Studies Working Paper No. 174, Nov 1994.

6. Cockburn, I. and R. Henderson “Exploring Inertia: Organizational Failure and Governance Costs in Pharmaceutical Research.” Mimeo, MIT Sloan School of Management, October 1994.
7. Cockburn, I. and R. Henderson “Public-Private Interaction and the Productivity of Pharmaceutical Research.” NBER Working Paper No. 6018, April 1997.
8. Cockburn, I. and A. Anis “Hedonic Analysis of Arthritis Drugs.” NBER Working Paper No. 6574, May 1998.
9. Cockburn, I., R. Henderson, and S. Stern “Balancing Incentives: The Tension Between Basic and Applied Research.” NBER Working Paper No. 6882, January 1999.
10. Finkelstein, S., I. Cockburn, H. Bailit, J. Verner, K. Haver, and E. Berndt “Lost Work Productivity and Absenteeism Among Parents of Children with Asthma.” MIT Program on the Pharmaceutical Industry, WP #57-00, November 1999.
11. Cockburn, I., R. Henderson, and S. Stern “The Diffusion of Science Driven Drug Discovery: Organizational Change in Pharmaceutical Research.” NBER Working Paper No.7359, September 1999.
12. Lanjouw, J. and I. Cockburn “Do Patents Matter? Empirical Evidence After GATT.” NBER Working Paper No. 7495, January 2000.
13. Cockburn, I., R. Henderson, and S. Stern “Untangling the Origins of Competitive Advantage.” MIT Sloan School of Management Working Paper No. 4109, March 2000.
14. Cockburn, I., S. Kortum, and S. Stern “Are All Patent Examiners Equal? The Impact of Examiner Characteristics on Patent Statistics and Litigation Outcomes.” NBER Working Paper No. 8980, June 2002.
15. Agrawal, A. and I. Cockburn “University Research, Industrial R&D, and the Anchor Tenant Hypothesis.” NBER Working Paper No. 9212, September 2002.
16. Agrawal, A., I. Cockburn, and J. McHale “Gone But Not Forgotten: Labor Flows, Knowledge Spillovers, and Enduring Social Capital.” NBER Working Paper No. 9950, September 2003.
17. Chwelos, P., E. Berndt, and I. Cockburn “Faster, Smaller, Cheaper: An Hedonic Price Analysis of PDAs.” NBER Working Paper No. 10746, September 2004.
18. Hausman, J. Berndt, E., P. Chwelos, and I. Cockburn “Measurement of the Change in Economic Efficiency from New Production Introductions.” Mimeo, MIT, August 2005.
19. Furman, J., M. Kyle, I. Cockburn, and R. Henderson “Public and Private Spillovers, Location and the Productivity of Pharmaceutical Research.” NBER Working Paper No. 12509, September 2006.
20. Cockburn, I. and M. MacGarvie “Entry, Exit, and Patenting in the Software Industry.” NBER Working Paper No. 12563, October 2006.
21. Cockburn, I. “Global Innovation in the Pharmaceutical Industry.” Conference Paper, Conference on Globalization of Innovation: Emerging Trends in IT, Biopharma and Financial Services, National Academy of Sciences, Washington DC, April 2007.

22. Cockburn I. "Is the Market for Technology Working Well? Obstacles to Licensing and Ways to Overcome Them." Conference Paper, Conference on Economics of Technology Policy, Monte Verità, June 2007.
23. Cockburn, I. and S. Wagner "Patents and the Survival of Internet-related IPOs." NBER Working Paper No. 13146, June 2007.
24. Grabowski, H., I. Cockburn, G. Long, R. Mortimer, and S. Johnson "The Effect on Federal Spending of Legislation Creating a Regulatory Framework for Follow-on Biologics: Key Issues and Assumptions." Working Paper 2007-09, Department of Economics, Duke University. August 2007.
25. Cockburn, I. and M. MacGarvie "Patents, Thickets and the Financing of Early-Stage Firms: Evidence from the Software Industry." NBER Working Paper No. 13644, November 2007.
26. Kleis, L., P. Chwelos, R. Ramirez and I. Cockburn "Information Technology and Intangible Output: The Impact of IT Investment on Innovation Productivity." Working Paper, Sauder School of Business.
27. Cockburn, I., M. MacGarvie, and E. Müller "Patent Thickets, Licensing and Innovative Performance." ZEW Center for European Economic Research Working Paper No. 08-101. November 2008.
28. Grabowski, H., I. Cockburn, G. Long, R. Mortimer "Data Exclusivity Periods and Next Generation Improvements to Innovator Biologics: Key Issues." Working Paper 2009-05, Department of Economics, Duke University. April. 2009.
29. Agrawal, A., Cockburn, I. and C. Rosell "Not Invented Here: Innovation in Company Towns." NBER Working Paper No. 15437, October 2009.
30. Müller, E. Cockburn, I. and MacGarvie, M. "Access to Intellectual Property for Innovation: Evidence on Problems and Coping Strategies from German Firms." TILEC Discussion Paper No. 2010-042, December 2010.
31. Agrawal, A. Cockburn, I., Galasso, A. and A. Oettl "Why are Some Regions More Innovative than Others? The Role of Firm Size Diversity." NBER Working Paper No. 17793, January 2012.
32. Berndt, E. and I. Cockburn "Price Indexes for Clinical Trial Research: A Feasibility Study." NBER Working Paper No. 18918, March 2013.
33. Aitken, M., E. Berndt, B. Bosworth, I. Cockburn, R. Frank, M. Kleinrock, M. and B. Shapiro "The Regulation of Prescription Drug Competition and Market Responses: Patterns in Prices and Sales Following Loss of Exclusivity." NBER Working Paper No. 18487, October 2013.
34. Agrawal, A., I. Cockburn, and L. Zhang "Deals Not Done: Sources of Failure in the Market for Ideas." NBER Working Paper No. 19679, November 2013.
35. Cockburn, I., J. Lanjouw, and M. Schankerman "Patents and the Global Diffusion of New Drugs." NBER Working Paper No. 20492, September 2014.

### Conference Proceedings

1. Cockburn, I. and R. Henderson “Public-Private Interaction in Pharmaceutical Research.” *Proceedings of the National Academy of Sciences*, 92/93, 12 November 1996, pp. 12725-12730.
2. Cockburn, I. and R. Henderson “Patent Races in Pharmaceutical Research.” *Risk and Return in the Pharmaceutical Industry: Papers from the 1996 Pharmaceutical Research Perspectives Conference*, Office of Health Economics, London, 1999.

### Abstracts

1. Cockburn I., E. Berndt, S. Finkelstein, and H. Bailit “Evaluating the impact of antihistamine use on productivity in the workplace.” *Journal of Allergy and Clinical Immunology*, Jan 1999, 103(1), p.968, Part 2 Suppl. S.
2. Stafford R., S. Finkelstein, I. Cockburn, C. Furberg, T. Alehgn “National trends in antihypertensive prescribing patterns, 1990-2002.” *Journal of General Internal Medicine*, April 2003, 18, Suppl. 1, pp.157-157.
3. Cockburn, I. “O brave new industry, that has such patents in it! Reflections on the economic consequences of patenting DNA” *Advances in Genetics*, 50:385-398.
4. Radley, D., R. Stafford, S. Finkelstein, and I. Cockburn “Off-label Prescription Among Outpatient Physicians.” AcademyHealth Annual Research Meeting, San Diego, June 2004.

### Other

1. Griliches, Z. and I. Cockburn “Generics and new goods in pharmaceutical price indexes: Reply.” *American Economic Review*, Sep 1997, 87(4), pp. 768-768.
2. Edgell E., K. Gregor, and I. Cockburn “Letter.” *Clinical Therapeutics*, May 1999, 21(5), pp 917-924.
3. Cockburn, I. “Remarks on the Proper Scope of IP Rights in the Post-Genomics Era.” *Boston University Journal of Science and Technology Law*, Winter 2002, 8(1) pp.240-244.
4. Giorganni, S., A. Arora, O. Bjerrum, I. Cockburn, K. Doshi, J. Hughes, L. Orsenigo, I. Osterloh, R. Paoletti, S. Preskorn, E. Weiner “The Stream of Progress.” *Pfizer Journal*, November 2003, IV(2), pp4-11.
5. Cockburn, I. “Comments” (Response to Commissioner McClellan’s remarks on international price discrimination in pharmaceuticals.) *Milken Institute Review*, First Quarter 2004, pp87-92.
6. Cockburn, I. “Remarks Before the Department of Health and Human Services Task Force on Drug Importation.” April 26, 2004.
7. Cockburn, I. “Comments on Nathan Rosenberg’s ‘Critical Episodes in the Progress of Medical Innovation’” in D. Foray (ed.) *The New Economics of Technology Policy*, Edward Elgar, 2010.
8. Berneman, L., I. Cockburn, A. Agrawal, S. Iyer “US/Canadian Licensing in 2007-8: Survey Results.” *les Nouvelles*, XLIV(1), pp1-8, March 2009.

9. Cockburn, I. "Remarks before the FTC Hearings on the Evolving IP Marketplace." April 17, 2009.
10. Cockburn, I. "Comment: 'The Confederacy of Heterogeneous Software Organizations and Heterogeneous Developers: Field Experimental Evidence on Sorting and Worker Effort,' by Kevin J. Boudreau and Karim R. Lakhani" in Josh Lerner and Scott Stern (eds.) *The Rate and Direction of Inventive Activity Revisited*, University of Chicago Press, 2012, pp502-505.
11. Cockburn, I. "Remarks on Costs of Patent Assertion Entities." FTC/DOJ Patent Assertion Entity Activities Workshop, December 10, 2012.
12. Signatory, Brief of Antitrust Economists as *Amici Curiae* before the Supreme Court, Federal Trade Commission v. Actavis, Inc., et al., No. 12-416 (February 28, 2013).
13. Signatory, Brief of Antitrust Economists as *Amici Curiae* before United States Court of Appeals For The Third Circuit, In Re: Lamictal Direct Purchaser Antitrust Litigation No. 14-1243 (June 3, 2014).

## B. RECENT SEMINAR AND CONFERENCE PRESENTATIONS

1. Discussant remarks: K. Bryan “R&D Policy and the Direction of Innovation”, NBER Summer Institute, July 2014.
2. Agrawal, A., I. Cockburn, L. Zhang “Deals not done: Sources of failure in the market for ideas”, NBER Summer Institute, July 2013.
3. \_\_\_\_\_, Conference on Patent Use, UK Intellectual Property Office, September 2013.
4. \_\_\_\_\_, KAIST, August 2014.
5. Cockburn, I. “Costs of Patent Assertion Entities.” FTC/DOJ Patent Assertion Entity Activities Workshop, Washington, DC, December 2012.
6. Discussant remarks: M. Gittelman “The revolution that never arrived: Clinical and genetic paradigms in bio-medical discovery.” 12th Annual Roundtable for Engineering Entrepreneurship Research, Georgia Tech, November 2012.
7. Berndt, E. and Cockburn, I. “An Experimental Price Index for Clinical Trials Research” National Science Foundation/National Academies SciSIP Principal Investigators Conference, September 2012.
8. \_\_\_\_\_, Bureau of Economic Analysis, US Department of Commerce, Washington DC, May 2013.
9. \_\_\_\_\_, National Institutes of Health, Washington DC, June 2014.
10. Discussant remarks: Kogan et al. “Technological Innovation, Resource Allocation, and Growth”, NBER Productivity, Innovation and Entrepreneurship Program Meeting, March 2012.
11. Discussant remarks: Bresnahan, Yin, and Landvoigt, “Information Acquisition and Consumer Choice” NBER Summer Institute, July 2011
12. Discussant remarks: Hegde and Sampat, “The Political Economy of Publicly-Funded Biomedical Research: Evidence from NIH Allocations for Rare Diseases.” NBER Summer Institute, July 2011
13. Discussant remarks: Boudreau and Lakhani “The Confederacy of Software Production: Field Experimental Evidence on Heterogeneous Developers, Tastes for Institutions and Effort.” NBER Conference on the 50<sup>th</sup> Anniversary of the Rate and Direction of Inventive Activity, October 2010.
14. Cockburn, I. and Schankerman, M. “Patents, Price Controls and Global Access to New Drugs”. 5<sup>th</sup> Conference on European Policy on Intellectual Property, Maastricht, October 2010.
15. \_\_\_\_\_, MIT Sloan School, October 2013.
16. \_\_\_\_\_, UCLA, January 2014.
17. Discussant remarks: Marx et al. “Regional Disadvantage? Non-Compete Agreements and Brain Drain.” NBER Summer Institute, July 2010.
18. Cockburn, I. “Local Innovation Market Structure and Growth.” Conference on Knowledge in Organizations, EPFL, Monte Verita, May 2010.
19. Agrawal, A., Cockburn, I. and Oettl, A. “Not Invented Here: Innovation in Company Towns.” 3<sup>rd</sup> Conference on Economics of Innovation and Entrepreneurship, Queens University, May 2010.
20. Berndt, E, Cockburn, I, and Thiers, F. “Characterizing the Global Landscape of Clinical Investigation.” Office of Health Economics, May 2010.
21. Cockburn, I. and MacGarvie, M. “Patent Thickets and Entry in Software.” KU Leuven, December 2009
22. Discussant remarks: Heidi Williams “IPRs and Innovation: Evidence from the Human Genome”, NBER Productivity and Technical Change Program Meeting, Cambridge MA December 2009.